Introduction

Many design projects include structures such as bridges, culverts, sign and signal supports, retaining walls, noise walls or perimeter walls. Additional structures design information and references can be found in the ***FDOT Design Manual*** (FDM) and on the ***Structures Design Office website***.

The Project Manager (PM) is responsible for the adequacy of all design submittals and for the coordination of reviews between the Department and the consultant. ***FDM 121 Bridge Project Development*** provides an overview of the structures design process, including the classification of structure, office responsibilities, the development process, phase submittals, and the assembly of the plans.

Structural designs for new construction and widenings are developed under the direction of the District Structures Design Offices (DSDO)in Tallahassee and the Structures Design Office (SDO). Structures are classified as Category 1 or Category 2 based upon design difficulty and structural complexity as defined in FDM 121. The DSDO has total project development and review responsibility for projects involving Category 1 Structures. The SDO has total project development and review responsibility for projects involving Category 2 Structures. For large projects with multiple bridges, review responsibilities will be coordinated between the DSDO and the SDO based on the category of the individual bridge, workload demands, and project make-up. The PM will need to maintain communication with the SDO and the DSDO as appropriate during the project. The PM is also responsible for establishing the schedule of submittals with input from the Engineer of Record (EOR) and either the DSDO for Category 1 projects or SDO Office for Category 2 projects.

Structural designs for repair or rehabilitation of bridges are generally developed under the direction of the District Structures Maintenance Engineer (DSME) and may not include all the following project phases.

Bridge Project Development

Bridge project development normally includes five phases:

1. Bridge Analysis
2. Bridge Development Report (BDR) / 30% Structures Plans Submittal
3. 60% Substructure Submittal / 60% Structures Plans Submittal
4. 90% Structures Plans Submittal
5. 100% Structures Plans and Specifications Submittal.

The required items and level of completeness for each phase submittal for various project types is indicated in tables in FDM.

Bridge Analysis:

The Bridge Analysis is performed during the Project Development & Environment (PD&E) process. The purpose of the Bridge Analysis is to determine the general attributes (type, size, and location) of the recommended bridge. The findings of the bridge analysis must be approved by the DSDO or the SDO, as applicable. The PM must coordinate with the District Structures Design Engineer (DSDE) who will review and concur with the bridge aspect of all projects during the PD&E process in accordance with ***Part 2, Chapter 3*** of the ***PD&E Manual***.

Bridge Development Report (BDR) / 30% Structures Plans Submittal:

The BDR is initiated after location design approval. The purpose of the BDR is to select the optimal bridge type and to establish the basic parameters for final design and detailing. The work necessary to prepare the BDR is determined on a case-by-case basis depending on the complexity of the bridge and other

factors. The DSDE will make the final determination on the scope of work necessary to prepare a BDR.

The BDR Submittal Checklist (***FDM 103, Form 121-A***) contains a list of items that must be included as part of the BDR submittal. The Typical Section Package and Design Variations or Exceptions should be approved prior to approval of the final BDR. Depending on the project, the 30% Structures Plans will be included as an Appendix to the BDR but may be a separate submittal after the BDR.

60% Substructure Submittal / 60% Structures Plans:

The contents of the 60% Submittal depend on whether the bridge is classified as a Category 1 or Category 2 Structure.

Category 1 Structures require a 60% Substructure Submittal, which is a partial plan set. The purpose of this submittal is to communicate essential project information to the Geotechnical and Hydraulic Engineers so that all remaining calculations can be performed using actual structural shapes, loads, and dimensions.

Category 2 Structures require a 60% Structures Plans Submittal (includes both substructure and superstructure).

90% Structures Plans:

The EOR will have resolved all prior review comments and the design and plans production are required to be complete. This submittal requires a completed set of plans, Estimated Quantities Report, design calculations, Final Geotechnical Report, Addendums to Hydraulic Report, and Technical Special Provisions (if applicable).

For Category 1 and 2 Structures, it will be the responsibility of the PM to coordinate a review of the 90% Structures Plan submittal. This review should occur at the same time as the Phase III Plans submittal for the roadway segments of the project. Additionally, for Category 2 Structures, it will be the responsibility of the SDO to coordinate a review of the 90% Structures Plans submittal. The Construction Offices should be given adequate time to perform these reviews. All comments from these reviews are required to be addressed prior to the 100% Structures Plans Stage submittal.

100% Structures Plans and Specifications:

The 100% Structures Plans Submittal should incorporate any remaining review comments and include signed and sealed plans, signed and sealed Technical Special Provisions (if applicable), and the Estimated Quantities Report.

Projects Involving Existing Bridges

The PM may be required to perform additional coordination on projects that involve the following existing bridges as described in ***FDM 110.5***:

1. See ***FDM 110.5.2.1*** for Projects involving existing steel bridges.
2. See ***FDM 110.5.2.2*** for Projects involving existing bridges with asbestos-containing materials.
3. See ***FDM 110.5.2.3*** and ***PMG 320*** for Projects involving bridge demolition.
4. See ***FDM 110.5.3*** for Projects involving bridges over navigable water.